

Yukio YAMADA*: Two new marine algae from Japan

山田幸男*: 日本産新海藻二種

***Punctaria projecta* spec. nov.**

Frons gregaria, 3-7 cm alta, oblonga vel lineari-oblonga, apice rotundata, basi cuneata vel late cuneata, margine levissime undulata vel integra, breviter stipitata, 110-160 μ crassa, 4-5 stratos, in sectione transversa cellulis medullaribus saepe lateraliter, corticalibus semper longitudinaliter elongatis et leviter projectis, pilis sparsis; sporangiis plurilocularibus copiosis, plerumque conicis, 40-60 μ longis, sed forma mensurae saepe variantibus; unilocularibus in frondibus sporangia plurilocularia ferrentibus raro productis, sphaericis vel hemisphaericis, 108 $\mu \times 57 \mu$.

Japan. Name: Yuruzi-habamodoki (nov.).

Hab.: On *Sargassum* sp. Horai-iwa, Miyazu Bay, and Maizuru Bay, Prov.

Tango.

Frond gregarious, yellowish brown, growing on the frond of *Sargassum* sp., 3-7 cm high, oblong or linear oblong in outline, round at apices, cuneate or broadly cuneate at base, very slightly undulate or entire at margin, ending downward into a short stipe; frond ca. 110-160 μ thick, composed of 4-5 layers of cells, in cross section medullary cells elongated laterally, while

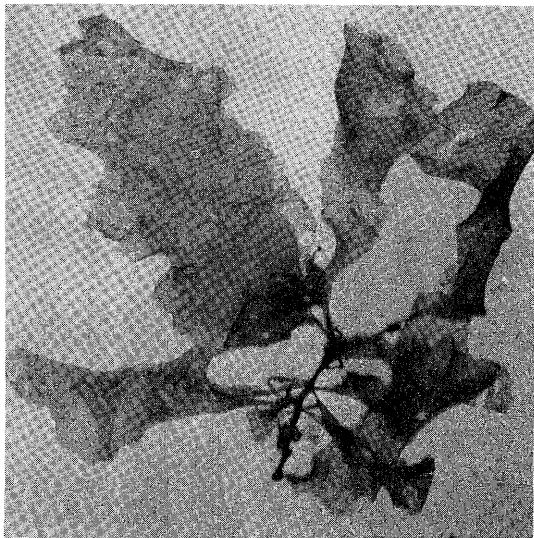


Fig. 1. *Punctaria projecta* Yamada sp. nov.

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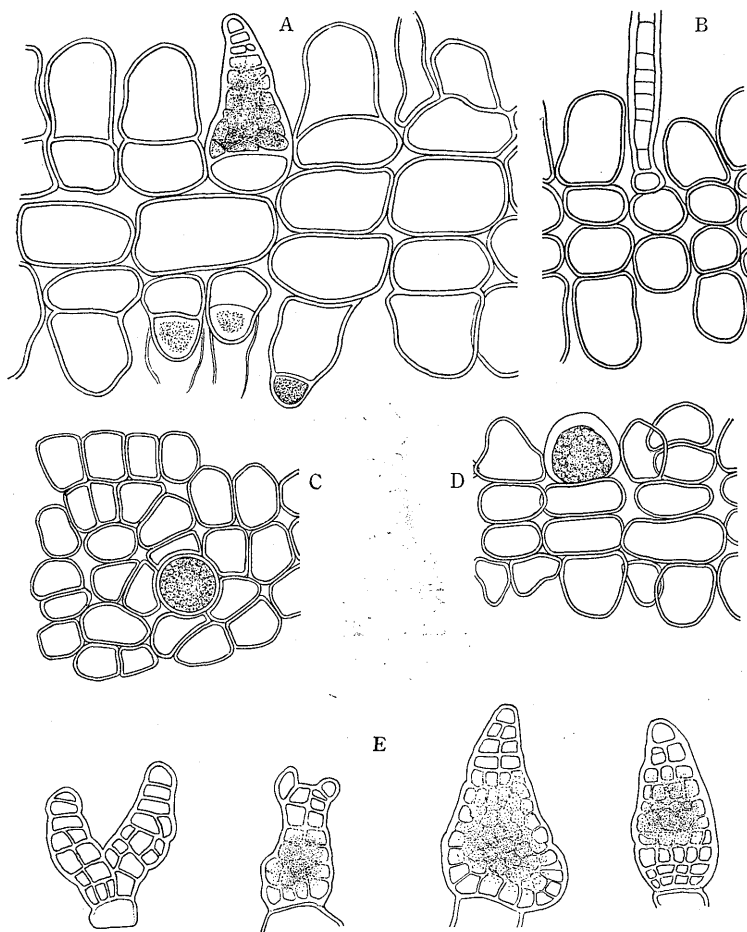


Fig. 2. *Punctaria projecta* Yamada sp. nov.

A. Cross section of the frond ($\times 750$). B. Hair ($\times 530$). C. Surface view of an unilocular sporangium ($\times 450$). D. Cross section of the frond showing an unilocular sporangium ($\times 480$). E. Different shapes of the plurilocular sporangia ($\times 750$).

cortical ones always longitudinally and slightly projecting; hairs present; both pluri- and unilocular sporangia produced on the separate, rarely on the same frond; plurilocular sporangia abundant, mostly conical, $40-60\ \mu$ long, but often variable in shape and size; unilocular ones rare, sphaerical or hemisphaerical.

The most striking characteristic of the species in question is the shape of the cortical cells in the cross section of the frond. They are elongated longitudinally and do not make a compact tissue, but a very loose one.

The shape of the plurilocular sporangia of this species is also very peculiar, resembling those in some species of *Ectocarpus* or its allies. Therefore at first it seemed to the writer that the specimens at hand were infested densely by some species of *Stroblonema*. But repeated examinations revealed their real belonging. They are mostly fusiform as stated in the above diagnosis, but often take very irregular shape, being sometimes bifurcate. The unilocular sporangia are very few in number and of about the same shape and size as the neighbouring cortical cells, being $108\ \mu$ long and $57\ \mu$ wide in the cross-section of the frond. They are produced mostly on the distinct plants, but rarely found together with plurilocular sporangia on one and the same frond.

Mesothamnion yagii spec. nov.

Frons solitaria vel laxe caespitosa, multis filamentis rhizoideis ex partibus basilaribus frondium vel ex cellulis basilaribus ramorum inferiorum emittentibus affixa, non corticata, repetite alternatim quoquoersum dense ramosa; filamentis rhizoideis simplicibus vel vage ramosis, ca $25-32\ \mu$ crassis, apice rotundatis; ramulis ultimis saepe incurvis, ca $30-45\ \mu$ crassis, apice obtusis; cellulis cylindraceis, ca $320\ \mu$ crassis in partibus inferioribus et in media parte frondium; sursum gradatim attenuatis, ad dissepimenta non vel laevissime constrictis; cellulis ramorum longis, 2-3 (-5)-plo diam. longioribus; tetrasporangiis obovatis, ca $64-86\ \mu$ longis, sessilibus, sine ordine dispersis, triangle vel interdum irregulariter cruciatim divis; corpusculis antheridiorum pedicellatis vel sessilibus, subcylindraceis vel globosis, ad laterem superiorem ramulorum ultimorum seriatis, ca $40-100\ \mu$ longis, ca $30-37\ \mu$ crassis; procarpiis terminalibus; cystocarpiis ex corpusculis 1-4 subglobosis vel elongatis compositis, $180-250-320\ \mu$ longis, ramulis incurvatis plus minusve involucretis.

Japanese name: Kudakoginu (S. Yagi).

Loc.: Kudako-jima, Onsen-gun, Ehime Prefecture.

Frond solitary or loosely caespitose, 5-6 cm, rarely 10 cm high, growing on the frond of *Sargassum* spp., fastening themselves, at least in the matured

plants, by means of many rhizoidal filaments issued from near the base of the frond, or of those issued from the basal cells of the branches in the lower or middle parts of the frond, composed of one row of cells, not corticated throughout the whole length but in the lower parts of the frond covered rather densely with rhizoidal filaments, ramified repeatedly alternately and densely in every directions; rhizoidal filaments descending along the cell-wall of the basal parts of the frond, simple or more or less ramified, about $25-32\ \mu$ thick, with round tip, not ending in a disc; ultimate branchlets often arcuate upward, about $30-45\ \mu$ thick, with round apices; cells cylindrical, about $320\ \mu$ thick, 1-1.5 times as long as diam. in the lower and middle parts of the main axis, decreasing gradually upwards in thickness, not or slightly constricted at dissepiments; those of branches generally longer, usually 2-3 (sometimes reaching 5) times as long as diam.; tetrasporangia obovate, about $64-86\ \mu$ long, sessile, scattered on the branches of every order without any regularity, but occasionally living on the upper side of filaments of branchlets, tetrahedrally divided, but sometimes irregular, seemingly cruciate or rarely divided into more than four; species dioecious; antheridial stands pedicellate or sessile, subcylindrical or globular, seriate on the upper side of the ultimate branchlets, about $40-100\ \mu$ long, $30-37\ \mu$ thick; procarps produced at the top of short branches; cystocarps composed of 1-4 gonimolobes which are nearly spherical or elongated and $180-250-320\ \mu$ long, surrounded by some arcuate branches like an involucre.

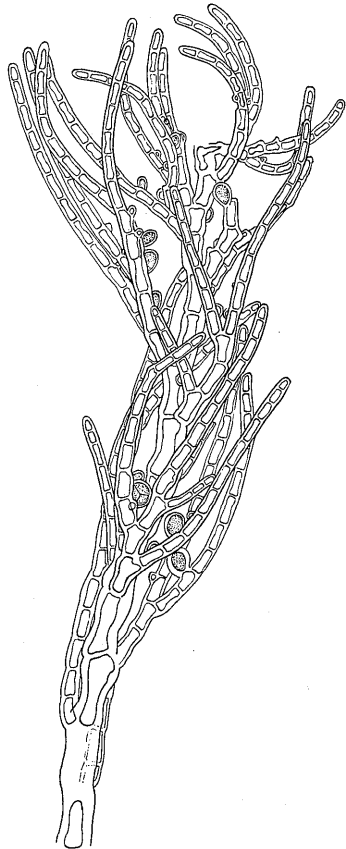


Fig. 3. *Mesothamnion yagii* Yamada sp. nov. A part of the frond bearing tetrasporangia.

The present species generally agrees well with the description of *Mesothamnion caribaeum* given by Boergesen in the Marine algae of the Danish West Indies, vol. II, pp. 208-216, especially in the mode of branching of the frond, in the position and structure of the procarp, cystocarp and antheridial stands. But there are some differences between our specimens and the West Indian ones. According to the original description of the Caribbean species the rhizoidal filaments issued from near the base of the frond and also from the basal cells of the branches by means of which the

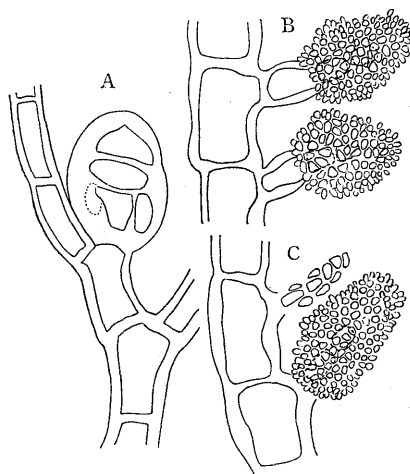


Fig. 4. *Mesothamnion yagii* Yamada sp. nov.
A. A young procarp ($\times 55$). B. Stalked antheridial stands ($\times 55$). C. Sessile antheridial stands ($\times 55$).

frond attaches to the host plant are much less than in the present species and they often form discs at their end, while in our material I have not seen any such ones, they ending always in a blunt apex. On the other hand the tetrasporangia in *Mesothamnion caribaeum* are spherical in shape and their diameter measures about 45μ . In our material, however, they are obovate in shape and larger than those of the other species, their length being usually between 60μ and 80μ . While sometimes they are arranged seriatly on the upper side of the filaments in the

branchlets as in the other species but usually they are distributed without any regularity. And moreover, I have found some sporangia among them, whose contents are divided into more spores than four.

At any rate the affinity of these two algae seems to be so close that I myself at first considered that they belonged to the one and the same species. But taking above differences between them into consideration, and also two remote localities where these algae have been found, I describe now provisionally our Japanese alga as a distinct species.

According to Mr. S. Yagi, collector of the present alga this alga was

found growing on the frond of a *Sargassum* which was collected from a rock about 4-7 m deep.

Dawson reported *Mesothamnion caribaeum* Boerg. in Nha Trang (Pac. Sci. vol. 8, no. 4, 1954, p. 444) but it is not possible to me to compare our specimens with his ones, because he emphasized the affinity of his specimens with the Boergesen's species but without giving any precise description of his specimens.

On the other hand Joly (1957) described another species of this genus from Brazil naming *M. boergeseni*; according to the description the contents of the tetrasporangia are sometimes divided into more spores than four as in our species, but in ours both the stalked and sessile antheridial stands are to be found.

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1. ユルヂハバモドキ (弛地ハバモドキ) は京都府宮津湾蓬萊岩付近及舞鶴湾に産し、ホンダワラ類の体上に生ずる。著しい特徴は体組織を構成する細胞の配列が弛く且つ体の両表面の細胞は夫々表面上に突出していることである。また、複子嚢は通常円錐形であるが時に二叉しているものも見られる。

2. クダコギヌ (八木繁一氏命名) クダコギヌ属 (*Mesothamnion*) は我国には初めての属で紅藻類イギス科に属する。本種は昭和 16 年 8 月八木繁一氏によって愛媛県温泉郡西中島クダコ島で低潮線下のホンダワラ属の体上に着生していたものが採取された。本属は 1917 年ベルゲーゼン博士により初めて西印度地方から報ぜられその種は *M. caribaeum* Boerg. と命名されたが、その後ブラジルの沿岸から他の 1 種 *M. boergesii* Joly が記載されている。また、故ドーソン博士はベトナムのナトラン臨海実験所付近から *M. caribaeum* Boerg. を報じたことがある。クダコギヌは上の 2 種の何れとも異なるものと見做される。